

FIG. 1A

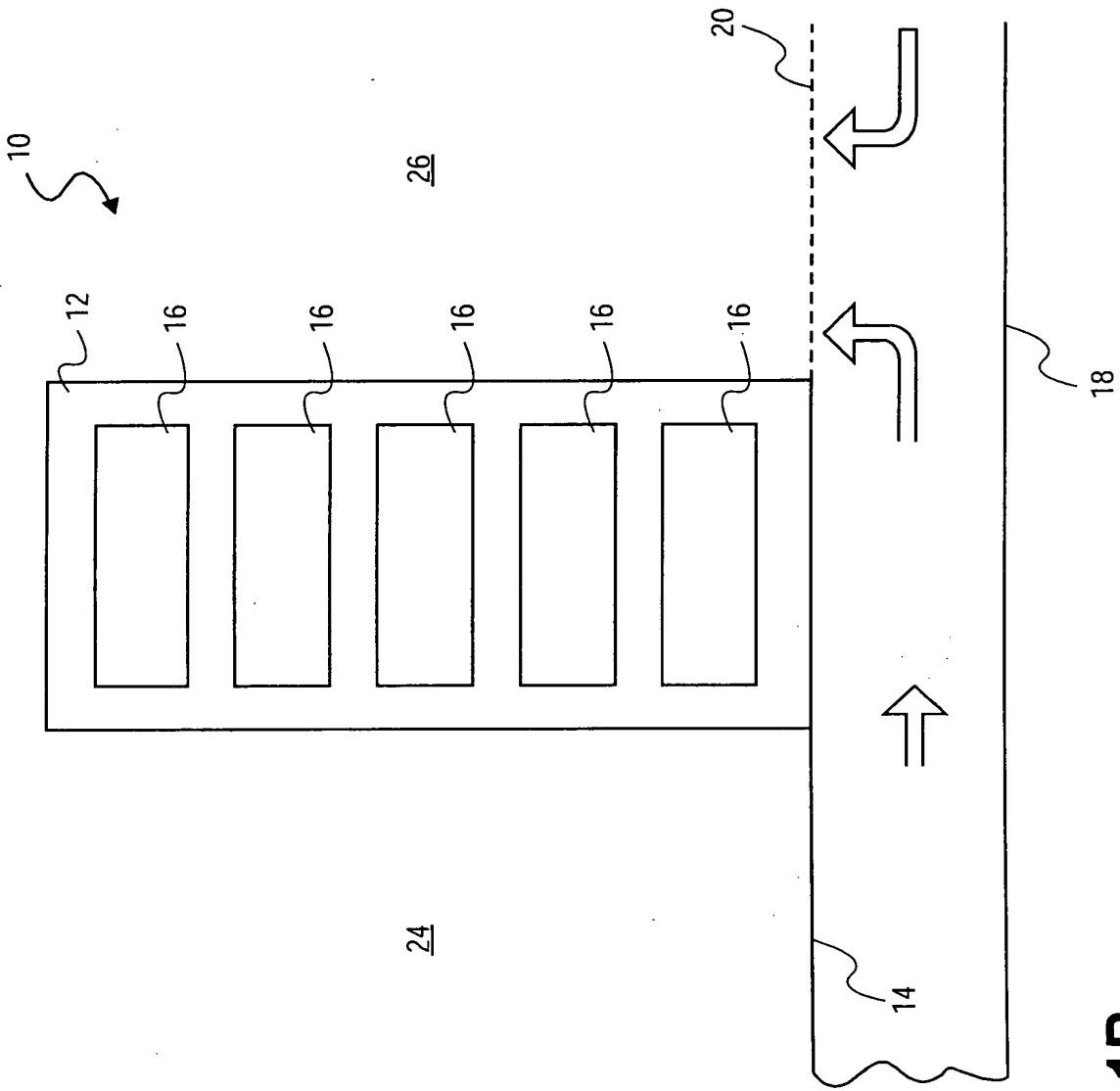


FIG. 1B

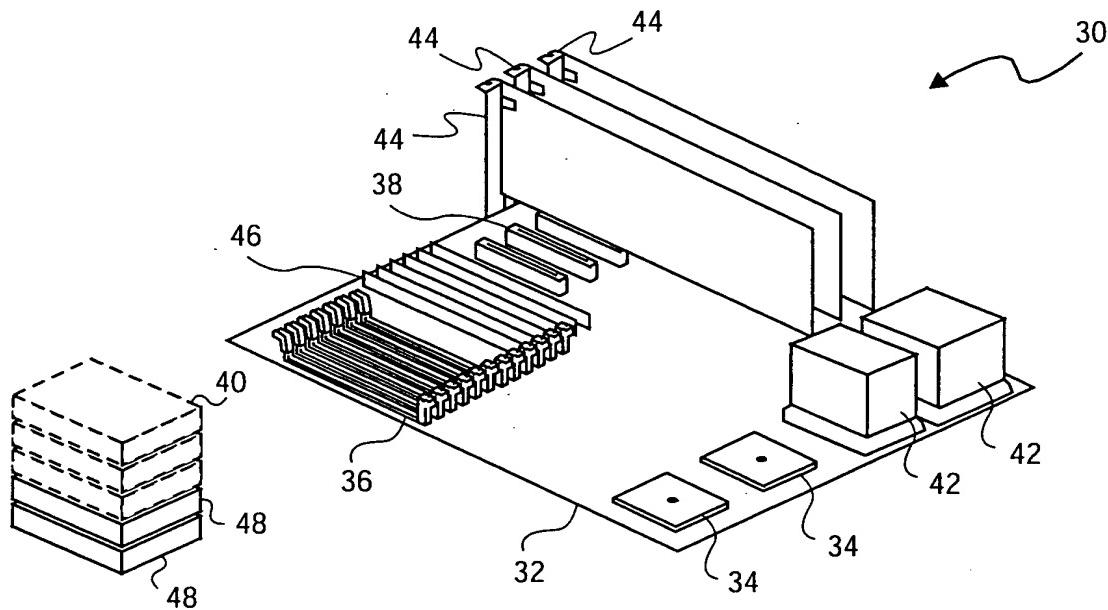


FIG. 2A

COMPONENT	ACTUAL CONFIG.	MAX CONFIG.	DE-RATING FACTOR	VR EFFICIENCY	POWER RANGE LOWER-UPPER (WATTS)	POWER CONSUMED (WATTS)
PROCESSORS (CPU)	2	4	0.8	0.85	30-60	$\frac{(4 \times 60 \times 0.8)}{0.85} = 225.9$
MEMORY	6	12	0.7	0.85	5-20	$\frac{(12 \times 20 \times 0.7)}{0.85} = 197.6$
I/O ADAPTERS	3	8	0.5	1.0	5-20	$\frac{(8 \times 20 \times 0.5)}{1.0} = 80$
DISK DRIVES	2	5	0.8	1.0	10-20	$\frac{(5 \times 20 \times 0.8)}{1.0} = 50$
				P _{MAX} →	553.5W	

FIG. 2B

Component	Quantity	Power (Watts)	De-rating Factor	VR Efficiency	Subtotal
I	q_I	p_I	D_I	E_I	$q_I \left(\frac{p_I D_I}{E_I} \right)$
\vdots	\vdots	\vdots	\vdots	\vdots	\vdots
j	q_j	p_j	D_j	E_j	$q_j \left(\frac{p_j D_j}{E_j} \right)$
\vdots	\vdots	\vdots	\vdots	\vdots	\vdots
J	q_J	p_J	D_J	E_J	$q_J \left(\frac{p_J D_J}{E_J} \right)$

$$P_{\text{CONFIG}} \rightarrow \sum_{j=1}^J q_j \left(\frac{p_j D_j}{E_j} \right)$$

Figure 3A

Component	Quantity	Power (Watts)	De-rating Factor	VR Efficiency	Subtotal (Watts)
Processors	2	40	0.8	0.85	75.3
Memory	6	10	0.7	0.85	49.4
I/O	3	10	0.5	1.0	15
Disk	2	15	0.8	1.0	24

$$P_{\text{CONFIG}} \rightarrow 163.7W$$

Figure 3B

Component	Quantity	Power (Watts)	De-rating Factor	VR Efficiency	Subtotal (Watts)
I	q_I	p_I	D_I	E_I	$q_I \left(\frac{p_I D_I}{E_I} \right)$
\vdots	\vdots	\vdots	\vdots	\vdots	\vdots
j	q_j	p_j	D_j	E_j	$q_j \left(\frac{p_j D_j}{E_j} \right)$
$j+1$	q_{j+1}	$P_{(MAX)j+1}$	D_{j+1}	E_{j+1}	$q_{j+1} \left(\frac{P_{(MAX)j+1} D_{j+1}}{E_{j+1}} \right)$
\vdots	\vdots	\vdots	\vdots	\vdots	\vdots
J	q_J	$P_{(MAX)J}$	D_J	E_J	$q_J \left(\frac{P_{(MAX)J} D_J}{E_J} \right)$

$$P_{\text{CONFIG}} \rightarrow \sum_{j=1}^J q_j \left(\frac{p_j D_j}{E_j} \right) + \sum_{j=j+1}^J q_j \left(\frac{P_{(MAX)j} D_j}{E_j} \right)$$

Figure 4A

Component	Quantity	Power (Watts)	De-rating Factor	VR Efficiency	Subtotal (Watts)
CPU	2	40	0.8	0.85	75.3
Memory	6	20	0.7	0.85	98.8
I/O	3	20	0.5	1.0	30
Disk	2	20	0.8	1.0	32

$$P_{\text{CONFIG}} \rightarrow 236.1 \text{W}$$

Figure 4B

Component	Quantity	Power (Watts)	De-rating Factor	VR Efficiency	Subtotal (Watts)
I	q_I	p_I	D_I	E_I	$q_I \left(\frac{p_I D_I}{E_I} \right)$
\vdots	\vdots	\vdots	\vdots	\vdots	\vdots
j	q_j	p_j	D_j	E_j	$q_j \left(\frac{p_j D_j}{E_j} \right)$
\vdots	\vdots	\vdots	\vdots	\vdots	\vdots
J	q_J	p_J	D_J	E_J	$q_J \left(\frac{p_J D_J}{E_J} \right)$

$$P_{\text{CONFIG}} \rightarrow \beta \left[\sum_{j=1}^J q_j \left(\frac{p_j D_j}{E_j} \right) \right]$$

Figure 5A

Component	Quantity	Power (Watts)	De-rating Factor	VR Efficiency	Subtotal (Watts)
CPU	2	40	0.8	0.85	75.3
Memory	6	10	0.7	0.85	49.4
I/O	3	10	0.5	1.0	15
Disk	2	15	0.8	1.0	24

Note: $\beta = 1.1$

$$P_{\text{CONFIG}} \rightarrow 180.1 \text{ W}$$

Figure 5B

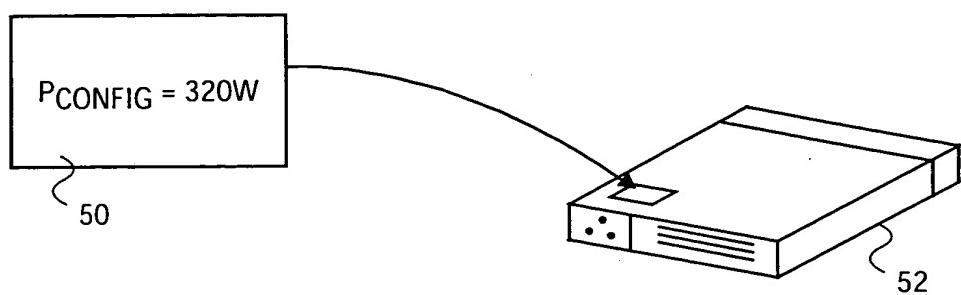


FIG. 6A

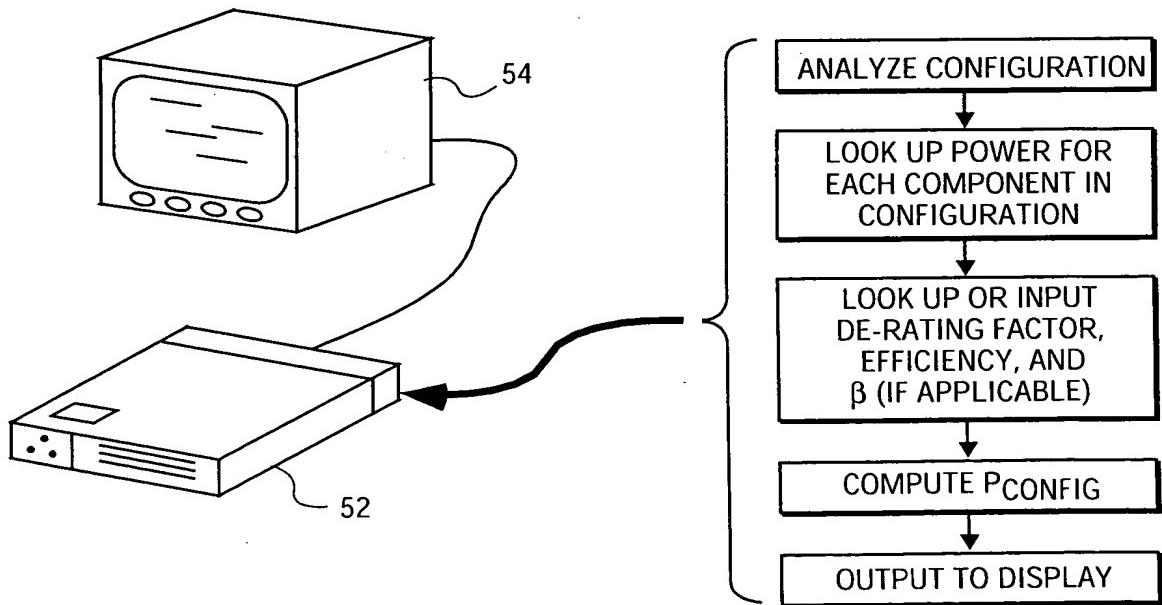


FIG. 6B

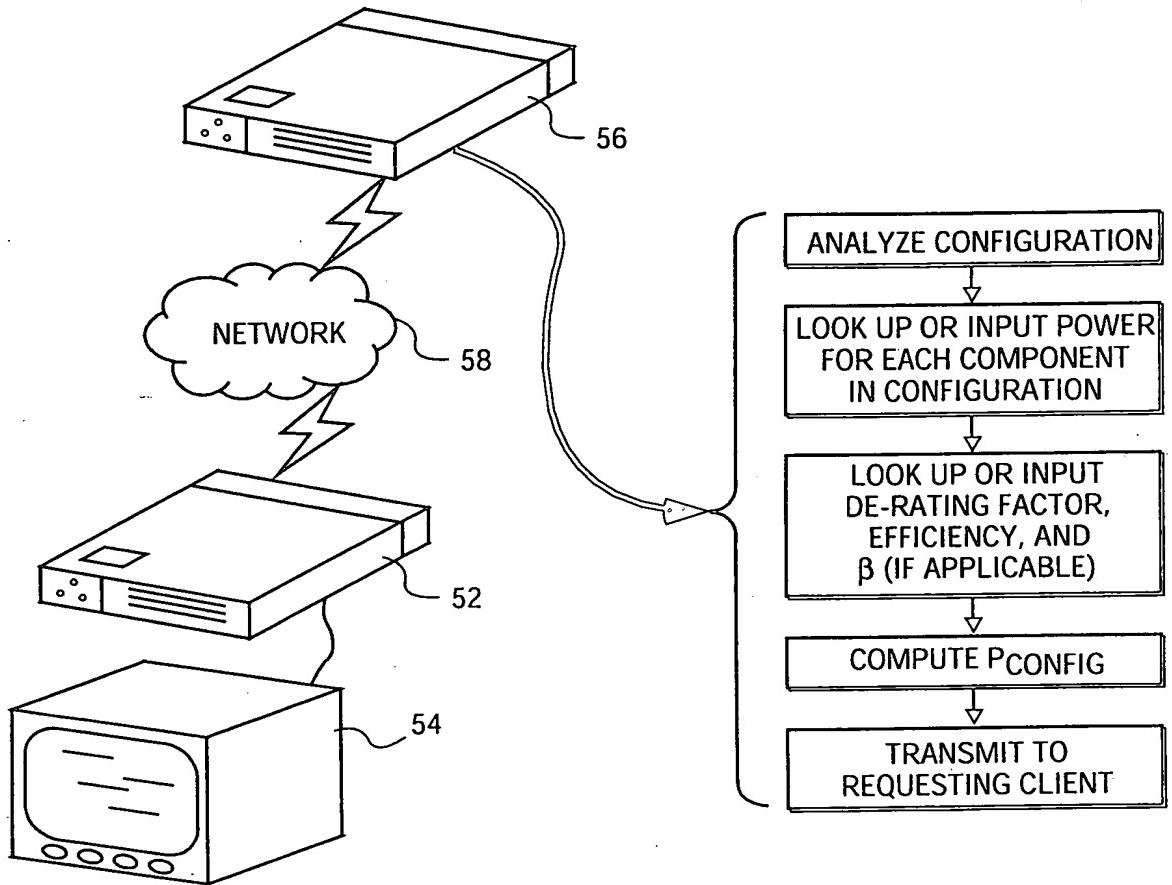


FIG. 6C